



6560-50-P

ENVIRONMENTAL PROTECTION AGENCY

40 CFR Part 52

[EPA-R04-OAR-2015-0518; FRL-9944-50-Region 4]

Air Plan Approval; North Carolina; Regional Haze

AGENCY: Environmental Protection Agency.

ACTION: Proposed rule.

SUMMARY: The Environmental Protection Agency (EPA) is proposing to approve a revision to North Carolina's regional haze State Implementation Plan (SIP), submitted by the North Carolina Department of Environment and Natural Resources (NC DENR) on October 31, 2014, that relies on an alternative to Best Available Retrofit Technology (BART) to satisfy BART requirements for electric generating units (EGUs) formerly subject to the Clean Air Interstate Rule (CAIR). EPA also proposes to find that final approval of this SIP revision would correct the deficiencies that led to EPA's limited disapproval of the State's regional haze SIP on June 7, 2012, and proposes to convert EPA's June 27, 2012, limited approval to a full approval. This submittal addresses the requirements of the Clean Air Act (CAA or Act) and EPA's rules that require states to prevent any future, and remedy any existing, manmade impairment of visibility in mandatory Class I areas caused by emissions of air pollutants from numerous sources located over a wide geographic area (also referred to as the regional haze program). States are required to assure reasonable progress toward the national goal of achieving natural visibility conditions in Class I areas.

DATES: Written comments must be received on or before [insert date 21 days after date of publication in the Federal Register].

ADDRESSES: Submit your comments, identified by Docket ID No. EPA-R04-OAR-2015-0518 at <http://www.regulations.gov>. Follow the online instructions for submitting comments.

Once submitted, comments cannot be edited or removed from Regulations.gov. EPA may publish any comment received to its public docket. Do not submit electronically any information you consider to be Confidential Business Information (CBI) or other information whose disclosure is restricted by statute. Multimedia submissions (audio, video, etc.) must be accompanied by a written comment. The written comment is considered the official comment and should include discussion of all points you wish to make. EPA will generally not consider comments or comment contents located outside of the primary submission (i.e. on the web, cloud, or other file sharing system). For additional submission methods, the full EPA public comment policy, information about CBI or multimedia submissions, and general guidance on making effective comments, please visit <http://www2.epa.gov/dockets/commenting-epa-dockets>.

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SUPPLEMENTARY INFORMATION:

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I. Background for EPA's Proposed Action

A. Overview of the Regional Haze Rule

Regional haze is visibility impairment that is produced by a multitude of sources and activities which are located across a broad geographic area and emit fine particles (e.g., sulfates, nitrates, organic carbon, elemental carbon, and soil dust) and their precursors (e.g., sulfur dioxide (SO₂), nitrogen oxides (NO_x), and in some cases, ammonia and volatile organic compounds). Fine particle precursors react in the atmosphere to form fine particulate matter (PM_{2.5}) which impairs visibility by scattering and absorbing light. Visibility impairment reduces the clarity, color, and visible distance that one can see.

In section 169A of the 1977 Amendments to the CAA, Congress created a program for protecting visibility in the nation's national parks and wilderness areas. This section of the CAA establishes as a national goal the "prevention of any future, and the remedying of any existing, impairment of visibility in mandatory Class I Federal areas (Class I areas) which impairment results from manmade air pollution." It also directs states to evaluate the use of retrofit controls at certain larger, often uncontrolled, older stationary sources in order to address visibility impacts from these sources. Specifically, section 169A(b)(2)(A) of the CAA requires states to revise their SIPs to contain such measures as may be necessary to make reasonable progress towards the national visibility goal, including a requirement that certain categories of existing major stationary sources built between 1962 and 1977 (known as "BART-eligible" sources) procure, install, and operate BART. In the 1990 CAA Amendments, Congress amended the visibility provisions in the CAA to focus attention on the problem of regional haze.

In 1999, EPA promulgated the Regional Haze Rule, which requires states to develop and implement SIPs to ensure reasonable progress toward improving visibility in Class I areas by reducing emissions that cause or contribute to regional haze. *See* 64 FR 35713 (July 1, 1999). The Regional Haze Rule requires each state, the District of Columbia, and the Virgin Islands to each submit a regional haze SIP no later than December 17, 2007. Under 40 CFR 51.308(e), the SIP must contain emission limitations representing BART and schedules for compliance with BART for each BART-eligible source, unless the SIP demonstrates that an emissions trading program or other alternative (BART Alternative) will achieve greater reasonable progress toward natural visibility conditions than would have resulted from the installation and operation of BART at all sources subject to BART and covered by the BART Alternative. An approvable BART Alternative must meet the criteria in 40 CFR 51.308(e)(2) as described in section II.B, below.

CAA Section 169A and the Regional Haze Rule require states to establish a long-term strategy for making reasonable progress toward meeting the national goal of achieving natural visibility conditions in Class I areas. The long-term strategy is the compilation of all enforceable emission limitations, compliance schedules, and other measures as necessary for a state to meet applicable reasonable progress goals during an implementation period. For the first implementation period, the long-term strategy includes BART as well as any other controls necessary to ensure reasonable progress.

B. North Carolina's Regional Haze SIP

North Carolina submitted its regional haze SIP on December 17, 2007, the regional haze SIP submittal deadline. Fully consistent with EPA's regulations at the time, the SIP relied on CAIR to satisfy NO_x and SO₂ BART requirements for CAIR-subject EGUs in the State and to

partially satisfy the requirement for a long-term strategy sufficient to achieve the state-adopted reasonable progress goals.

CAIR, promulgated in 2005, required 27 states and the District of Columbia to reduce emissions of NO_x and SO₂ that significantly contribute to, or interfere with maintenance of, the 1997 national ambient air quality standards (NAAQS) for fine particulates and for ozone in any downwind state. CAIR imposed specified emissions reduction requirements on each affected state and established an EPA-administered cap and trade program for EGUs that states could join as a means to meet these requirements.

EPA demonstrated that CAIR achieved greater reasonable progress toward the national visibility goal than BART for NO_x and SO₂ at BART-eligible EGUs in CAIR affected states, and the Agency revised the Regional Haze Rule to provide that states participating in CAIR's cap-and-trade program need not require affected BART-eligible EGUs to install, operate, and maintain BART for emissions of SO₂ and NO_x. *See* 70 FR 39104 (July 6, 2005). As a result, a number of states in the CAIR region designed their regional haze SIPs to rely on CAIR as an alternative to NO_x and SO₂ BART for CAIR-subject EGUs. These states also relied on CAIR as an element of a long-term strategy for achieving their reasonable progress goals.

The United States Court of Appeals for the District of Columbia Circuit (D.C. Circuit) initially vacated CAIR in 2008,¹ but ultimately remanded the rule to EPA without vacatur to preserve the environmental benefits provided by CAIR.² On August 8, 2011, acting on the D.C. Circuit's remand, EPA promulgated the Cross-State Air Pollution Rule (CSAPR) to replace CAIR and thus to address the interstate transport of emissions contributing to nonattainment and

¹ *North Carolina v. EPA*, 531 F.3d 896 (D.C. Cir. 2008).

² *North Carolina v. EPA*, 550 F.3d 1176 (D.C. Cir. 2008).

interfering with maintenance of the two air quality standards covered by CAIR as well as the 2006 PM_{2.5} NAAQS.³ *See* 76 FR 48208.

Due to CAIR's status as a temporary measure following the D.C. Circuit's 2008 ruling, EPA could not fully approve regional haze SIP revisions to the extent that they relied on CAIR to satisfy the BART requirement and the requirement for a long-term strategy sufficient to achieve the state-adopted reasonable progress goals. On these grounds, EPA finalized a limited disapproval of North Carolina's regional haze SIP on June 7, 2012, triggering the requirement for EPA to promulgate a FIP unless North Carolina submitted and EPA approved a SIP revision that corrected the deficiency. *See* 77 FR 33642. EPA finalized a limited approval of North Carolina's regional haze SIP on June 27, 2012, as meeting the remaining applicable regional haze requirements set forth in the CAA and the Regional Haze Rule. *See* 77 FR 38185.

II. Analysis of North Carolina's Regional Haze SIP Submittal

On October 31, 2014, NC DENR submitted a revision to North Carolina's regional haze SIP to correct the deficiencies identified in the June 7, 2012, limited disapproval by replacing reliance on CAIR with reliance on a BART Alternative to satisfy NO_x and SO₂ BART requirements for EGUs formerly subject to CAIR. EPA is proposing to approve this SIP revision because EPA is proposing to determine that the BART Alternative contained therein meets the requirements of 40 CFR 51.308(e)(2) and that final approval of this SIP revision would correct the deficiencies that led to EPA's limited disapproval of the State's regional haze SIP.

³ Although a number of parties challenged the legality of CSAPR and the D.C. Circuit initially vacated and remanded CSAPR to EPA in *EME Homer City Generation, L.P. v. EPA*, 696 F.3d 7, 38 (D.C. Cir. 2012), the United States Supreme Court reversed the D.C. Circuit's decision on April 29, 2014, and remanded the case to the D.C. Circuit to resolve remaining issues in accordance with the high court's ruling. *EPA v. EME Homer City Generation, L.P.*, 134 S. Ct. 1584 (2014). On remand, the D.C. Circuit affirmed CSAPR in most respects and CSAPR is now in effect. *EME Homer City Generation, L.P. v. EPA*, 795 F.3d 118 (D.C. Cir. 2015).

A. North Carolina's BART Alternative

North Carolina's October 31, 2014, SIP revision relies on the State's Clean Smokestacks Act (CSA) as a BART Alternative for NO_x and SO₂ at the BART-eligible EGUs formerly covered by CAIR. North Carolina enacted the CSA in 2002 to improve air quality by imposing firm caps on the total annual emissions of NO_x and SO₂ from 42 coal-fired EGUs at the 14 power plants identified in Table 1, below, operated by Duke Energy Progress, LLC (Progress Energy) and Duke Energy Carolinas, LLC (Duke Energy).⁴ The CSA requires Duke Energy EGUs and Progress Energy EGUs to reduce SO₂ emissions to 150,000 tons and 100,000 tons, respectively, by the end of 2009 and to further reduce SO₂ emissions to 80,000 tons and 50,000 tons, respectively, by the end of 2013. The CSA limits NO_x emissions from Duke Energy EGUs and Progress Energy EGUs to 35,000 tons and 25,000 tons, respectively, beginning on January 1, 2007, and tightens the emissions cap on Duke Energy EGUs to 31,000 tons as of January 1, 2009. Collectively, the caps require these utilities to: (1) reduce actual emissions of NO_x from 245,000 tons in 1998 to 56,000 tons by 2009 (a 77 percent reduction), and (2) reduce actual SO₂ emissions from 489,000 tons in 1998 to 250,000 tons by 2009 (a 49 percent reduction) and to 130,000 tons by 2013 (a 73 percent reduction).

Duke Energy and Progress Energy must meet the CSA emission caps through actual reductions. The CSA does not allow these units to buy or trade emissions credits (also referred to as "allowances") under CSAPR to meet these caps even though each utility may decide how to allocate emission reductions across its affected units.⁵ Furthermore, any CSAPR allowances in

⁴ More information on the CSA regulation can be found at <http://daq.state.nc.us/news/leg/cleanstacks.shtml>. At the time that the CSA was enacted, the Progress Energy units were owned by Progress Energy Carolinas, Inc. and the Duke Energy units were owned by Duke Power.

⁵ The CSA also prohibited the purchase and trade of CAIR credits to meet the CSA caps when CAIR was in effect. Allowances cannot be traded between the units owned by Progress Energy and those owned by Duke Energy.

excess of the CSA emissions caps must be surrendered to the North Carolina State Treasurer thereby preventing the transfer of these allowances to EGUs located in other states within the CSAPR trading program.⁶ EPA approved the CSA emissions caps into North Carolina's SIP on September 26, 2011. *See* 76 FR 59250.

Progress Energy and Duke Energy have shut down 22 of the coal-fired EGUs subject to the CSA and have installed scrubbers to control SO₂ emissions and Selective Catalytic Reduction (SCR) or Selective Non-catalytic Reduction (SNCR) to control NO_x emissions on all of the currently operating coal-fired EGUs subject to the CSA in order to meet the emissions caps.

Table 1, below, identifies the retired units and the NO_x and SO₂ emissions controls on the operating units.

Table 1. EGUs Subject to the CSA

Status	Facility	Parent Company*	Unit ID	BART-Eligible	NO _x Control	SO ₂ Control
Operating ⁷	Allen	Duke	1-5		SNCR	FGD
	Asheville	Progress	1-2	Y	SCR	FGD
	Buck	Duke	5-9		SNCR	**
	Belews Creek	Duke	1-2	Y	SCR	FGD
	Cliffside	Duke	5	Y	SCR	FGD
			6		SCR	FGD
	Marshall	Duke	1-2, 4	Y	SNCR	FGD
			3	Y	SCR	FGD
	Mayo	Progress	1		SCR	FGD
	Roxboro	Progress	1-3	Y	SCR	FGD
			4		SCR	FGD
Retired	Cape Fear	Progress	5-6			
	Cliffside	Duke	4			
	Dan River	Duke	1-3			

⁶ In 2013, Duke Energy reported an excess of 58,961 CAIR SO₂ allowances and 1,987 CAIR NO_x allowances above CSA emissions limits and Progress Energy reported 78,050 excess CAIR SO₂ allowances. All of these excess allowances have been verified and transferred to the State.

⁷ This category includes EGUs that were converted from coal to natural gas.

	Lee	Progress	1-3			
	Riverbend	Duke	7-10			
	Sutton	Progress	3	Y		
	Weatherspoon	Progress	1-3			

* Duke Energy and Progress Energy merged on July 2, 2012

** Units converted from coal to natural gas

B. EPA's Evaluation of North Carolina's BART Alternative

The Regional Haze Rule requires that a SIP revision establishing a BART Alternative include the three elements listed below, and EPA has evaluated North Carolina's BART Alternative with respect to each of these elements.

- A demonstration that the emissions trading program or other alternative measure will achieve greater reasonable progress than would have resulted from the installation and operation of BART at all sources subject to BART in the state and covered by the alternative program. *See* 40 CFR 51.308(e)(2)(i).
- A requirement that all necessary emissions reductions take place during the period of the first long-term strategy for regional haze. *See* 40 CFR 51.308(e)(2)(iii).
- A demonstration that the emissions reductions resulting from the alternative measure will be surplus to those reductions resulting from measures adopted to meet requirements of the CAA as of the baseline date of the SIP. *See* 40 CFR 51.308(e)(2)(iv).

EPA seeks comments on its proposed findings under each of these elements, which are described in detail below.

1. Demonstration that the BART Alternative Will Achieve Greater Reasonable Progress than BART

Pursuant to 40 CFR 51.308(e)(2)(i), the state must demonstrate that the BART Alternative will achieve greater reasonable progress than would have resulted from the installation and operation of BART at all sources subject to BART in the state and covered by the alternative program. This demonstration must be based on the five criteria addressed below.

a. List of All BART-Eligible Sources Within the State

Pursuant to 40 CFR 51.308(e)(2)(i)(A), the SIP submission must include a list of all BART-eligible sources within the state. In its December 31, 2007, regional haze SIP submittal, North Carolina identified all 17 BART-eligible sources located in the State. *See* 77 FR 11858, 11873-11874 (February 28, 2012). Of these 17 sources, six were subject to CAIR and 11 were non-EGUs. North Carolina determined that one non-EGU source was subject to BART, nine were exempt from BART, and one was shut down. *See* 77 FR 11873, 11874 (February 28, 2012). The State relied on CAIR to satisfy the NO_x and SO₂ BART requirements for the 13 BART-eligible EGUs at the six CAIR-subject sources. EPA approved the State's identification of BART-eligible and BART-subject sources and the BART determination for the one BART-subject source not subject to CAIR (Blue Ridge Paper). *See* 77 FR 38185 (June 27, 2012). EPA issued a limited disapproval of the State's SIP submittal based on its reliance on CAIR to satisfy NO_x and SO₂ BART requirements for certain sources and to satisfy the long-term strategy requirements of its EGUs. *See* 77 FR 33642 (June 7, 2012). In its October 31, 2014, SIP revision, the State lists the 13 BART-eligible EGUs impacted by EPA's limited disapproval. Because the State identified all BART-eligible units in its regional haze SIP and identified all outstanding BART-eligible units in its BART Alternative SIP revision, EPA proposes to find that the State has met the requirement of 40 CFR 51.308(e)(2)(i)(A).

b. List of All BART-Eligible Sources and All Bart Source Categories Covered by the Alternative Program

Pursuant to 40 CFR 51.308(e)(2)(i)(B), the SIP submission must include a list of all BART-eligible sources and all BART source categories covered by the BART Alternative, and each BART-eligible source in the state must be subject to the requirements of the alternative program or have a federally enforceable emission limitation determined by the state and approved by EPA as meeting BART. As previously mentioned, EPA approved the BART determinations for all BART-eligible units in North Carolina with the exception of NO_x and SO₂ BART for the 13 BART-eligible EGUs formerly covered by CAIR, and these 13 units are subject to the BART Alternative. Therefore, EPA proposes to find that the SIP revision satisfies 40 CFR 51.308(e)(2)(i)(B).

c. Analysis of BART and Associated Emissions Reductions

Pursuant to 40 CFR 51.308(e)(2)(i)(C), the SIP submission must include an analysis of the best system of continuous emissions control technology available and associated emission reductions achievable for each source subject to BART and covered by the alternative program. This analysis must be conducted by making a BART determination for each source subject to BART and covered by the alternative program unless the alternative has been designed to meet a requirement other than BART. In this latter case, the State may determine the best system of continuous emissions control technology and associated emission reductions for similar types of sources within a source category based on both source-specific and category-wide information, as appropriate. North Carolina opted to use the simplified approach because North Carolina created the CSA to meet requirements other than BART.

In using the simplified approach for EGUs, states may estimate the emissions reductions associated with BART based on an analysis of what BART is likely to be for similar types of sources within the source category using the presumptions for EGUs in the *Guidelines for BART Determinations under the Regional Haze Rule* located at 40 CFR part 51, Appendix Y (BART Guidelines). The BART Guidelines contain presumptive NO_x and SO₂ emissions limits for EGUs greater than 200 megawatt (MW) capacity at plants with a total generating capacity in excess of 750 MW. When a state is estimating the emissions reductions achievable through BART at the BART-eligible EGUs covered by the BART Alternative, it should assume that these EGUs would control at the presumptive level unless the state determines that such presumptions are not appropriate.

i. SO₂ Emissions Reductions

The BART Guidelines specify the presumptive SO₂ BART limit at 95 percent control or 0.15 pounds per million British Thermal Units (lbs/MMBtu) for uncontrolled EGUs greater than 200 MW at 750 MW power plants unless an alternative control level is justified. *See* 40 CFR part 51, App. Y, IV.E.4. North Carolina used this presumptive limit to calculate SO₂ BART emissions by multiplying the limit by each BART-eligible EGU's 2002 heat input in MMBtu. When compared to actual 2002 SO₂ emissions, the State calculated that BART would reduce SO₂ emissions by 274,668 tons. *See* Table 3 in North Carolina's October 31, 2014, submittal.

ii. NO_x Emissions Reductions

All of the BART-eligible EGUs subject to the CSA burn bituminous coal and have either wall-fired or tangential-fired boilers. *See* Table 1 of the State's October 31, 2014, submittal. The presumptive NO_x emission limits for these EGUs are 0.39 and 0.28 lb/MMBtu for wall-fired and tangential-fired boilers, respectively, unless an alternative control level is justified. *See* 40

CFR part 51, App. Y, IV.E.5. North Carolina used these presumptive limits to calculate NO_x BART emissions by multiplying the corresponding limits by each BART-eligible EGU's 2002 heat input in MMBtu. When compared to actual 2002 NO_x emissions, the State calculated that BART would reduce NO_x emissions by 19,364 tons. *See* Table 8 in North Carolina's October 31, 2014, submittal.

d. Analysis of Emissions Reductions Associated with the BART Alternative

Pursuant to 40 CFR 51.308(e)(2)(i)(D), the SIP submission must include an analysis of the projected emissions reductions achievable through the BART Alternative. North Carolina projected these reductions using four different methods: 1) CSA emissions caps; 2) 2018 emissions projected by the Visibility Improvement - State and Tribal Association of the Southeast (VISTAS)⁸ and presented in North Carolina's December 17, 2007, regional haze SIP submission; 3) 2018 emissions projected by EPA's Integrated Planning Model (IPM); and 4) 2018 emissions projected by Duke Energy after the merger with Progress Energy. North Carolina also evaluated actual emissions reductions from the CSA units by comparing 2009, 2010, 2011, 2012, and 2013 emissions to 2002 levels. Table 2 shows the emissions reductions associated with the BART Alternative using the CSA caps and 2018 projections identified above, and Tables 3 and 4 show the reductions using actual emissions from 2009-2015.

⁸ VISTAS is a collaborative effort of state governments, tribal governments, and various Federal agencies established to initiate and coordinate activities associated with the management of regional haze, visibility, and other air quality issues in the southeastern United States. Member state and tribal governments include: Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee, Virginia, West Virginia, and the Eastern Band of the Cherokee Indians.

Table 2. BART Alternative Emissions Reductions (tons) from 2002 Baseline Using CSA Caps and 2018 Projections

	Pollutant	2002 Baseline	CSA Cap	2018 VISTAS	2018 IPM	2018 Duke
Emissions	SO ₂	467,321	130,000	89,343	24,732	23,901
Reductions from Baseline			337,321	377,978	442,589	443,420
Emissions	NO _x	142,879	56,000	42,133	22,792	22,414
Reductions from Baseline			86,879	100,746	120,087	120,465

Table 3. BART Alternative Emissions Reductions from 2002 Baseline Using Actual Emissions (tons) – SO₂

	2002 Baseline	2009 Actuals	2010 Actuals	2011 Actuals	2012 Actuals	2013 Actuals
Emissions	467,321	110,818	116,529	73,457	53,458	42,080
Reductions from Baseline		356,503	350,792	393,864	413,863	425,241

Table 4. BART Alternative Emissions Reductions from 2002 Baseline Using Actual Emissions (tons) – NO_x

	2002 Baseline	2009 Actuals	2010 Actuals	2011 Actuals	2012 Actuals	2013 Actuals
Emissions	142,879	37,829	47,373	39,361	42,147	40,410
Reductions from Baseline		105,050	95,506	103,518	100,732	102,469

i. CSA Caps

Under the CSA, Duke Energy EGUs and Progress Energy EGUs were required to reduce SO₂ emissions to 150,000 tons and 100,000 tons, respectively, by the end of 2009 and to further reduce SO₂ emissions to 80,000 tons and 50,000 tons, respectively, by the end of 2013. Using the 2013 emissions caps, the BART Alternative would reduce SO₂ emissions by 337,321 tons from 2002 levels.

The CSA limited NO_x emissions from Duke Energy EGUs and Progress Energy EGUs to 35,000 tons and 25,000 tons, respectively, beginning on January 1, 2007, and tightened the emissions cap on Duke Energy EGUs to 31,000 tons as of January 1, 2009. Using the 2009 emissions caps, the BART Alternative would reduce NO_x emissions by 86,879 tons from 2002 levels.

ii. 2018 Projections

VISTAS developed 2018 emissions projections for the states in the VISTAS region to use when preparing the states' regional haze SIP submissions. VISTAS accounted for the CSA emissions caps and other control programs, including CAIR, in its 2018 modeling and projected total NO_x and SO₂ emissions from North Carolina's EGUs at 42,133 tons and 89,343 tons, respectively. *See* 77 FR 11866 (February 28, 2012). North Carolina compared these 2018 VISTAS emissions projections for the CSA units with 2002 actual emissions and estimated that NO_x and SO₂ emissions from these units would decrease by 100,746 tons and 377,978 tons, respectively. The projected NO_x and SO₂ emissions reductions from only the BART-eligible sources in the CSA would be 69,485 tons and 276,998 tons, respectively.

North Carolina also included EPA IPM modeling year 2018 NO_x and SO₂ emissions estimates for the CSA EGUs. The IPM predicted that these units would emit approximately 22,792 tons of NO_x emissions in 2018, resulting in a projected reduction of 120,087 tons when compared with 2002 actual emissions. The IPM also predicted 24,732 tons of SO₂ emissions from these units in 2018, resulting in a projected reduction of 442,589 tons compared to 2002 actual emissions. These predictions are well below VISTAS' 2018 projections and the CSA emissions caps.

Following the merger with Progress Energy, Duke Energy projected 2018 emissions for its EGUs in North Carolina due to the significant shift from coal to natural gas and the retirement of several EGUs in the State. These estimates were prepared by Duke Energy based on its economic modeling, and they differ only slightly from the IPM forecast. The primary difference between the Duke Energy and IPM estimates is that EPA assumed in the IPM that the Allen facility's coal-fired EGUs would be shut down by 2018.⁹ Duke Energy projected that the CSA units would emit approximately 22,414 tons of NO_x and 23,901 tons of SO₂ in 2018, a reduction of approximately 120,465 and 443,420 tons of NO_x and SO₂, respectively, from 2002 levels, respectively.

iii. Actual Emissions Reductions

North Carolina analyzed actual emissions reductions achieved with the CSA for each year from 2009 to 2013 using emissions reported to EPA's Clean Air Markets Division. North Carolina started with 2009 because this is the year when Duke Energy and Progress Energy were required to comply with the CSA's first SO₂ cap and the final NO_x cap. Emissions of SO₂ steadily decreased from 116,529 tons in 2010 to 42,080 tons in 2013. Actual NO_x emissions ranged from 47,373 tons in 2010 to 40,410 tons in 2013. *See* Tables 6 and 11 in North Carolina's October 31, 2014, submittal for actual emissions by CSA facility.

e. Determination that the BART Alternative Achieves Greater Reasonable Progress than BART

Pursuant to 40 CFR 51.308(e)(2)(i)(E), the state must provide a determination that the alternative achieves greater reasonable progress than BART under 40 CFR 51.308(e)(3) or

⁹ Duke Energy must retire Allen Units 1 and 2 by December 31, 2024, pursuant to a consent decree entered by the United States District Court for the Middle District of North Carolina on October 20, 2015. Consent Decree, *United States, et al. v. Duke Energy Corporation*, Civil Case No. 1:00-cv-1262 (M.D.N.C. October 20, 2015).

otherwise based on the clear weight of evidence. 40 CFR 51.308(e)(3) provides two different tests for determining whether the alternative achieves greater reasonable progress than BART. Under the first test, if the distribution of emissions is not substantially different than under BART, and the alternative measure results in greater emission reductions, then the alternative measure may be deemed to achieve greater reasonable progress. If the distribution of emissions is significantly different, however, then the state must use the second test and conduct dispersion modeling to determine differences in visibility between BART and the alternative program for each impacted Class I area, for the worst and best 20 percent of days. *See* 40 CFR 51.308(e)(3). The modeling would demonstrate “greater reasonable progress” if: (1) visibility does not decline in any Class I area, and (2) there is an overall improvement in visibility, determined by comparing the average differences between BART and the alternative over all affected Class I areas. North Carolina did not provide dispersion modeling because it believes that greater reasonable progress can be shown through an emissions reduction analysis under the first 40 CFR 51.308(e)(3) test and/or through a weight-of-evidence analysis based on the types of controls installed on the BART-eligible CSA units, the reductions in visibility impairing pollutants associated with the CSA, and the uniform nature of these reductions across all EGUs subject to the CSA.

EPA proposes to determine that the CSA achieves greater reasonable progress than would be achieved through the installation and operation of BART at the BART-eligible EGUs covered by the CSA based on the following weight of evidence.

First, BART would result in controls for NO_x and SO₂ only at the 13 BART-eligible EGUs, whereas the BART Alternative applies to 42 EGUs. Of these 42 EGUs, 17 have retired,

five have converted from coal to natural gas, and the remaining 20 coal-fired EGUs in operation are controlled for NO_x and SO₂.

Second, the 20 operating coal-fired EGUs in the BART Alternative have installed emissions controls to meet the CSA that are, with the exception of NO_x control at Allen Units 1-5 and Marshall Units 1, 2, and 4, the most stringent controls available for SO₂ and NO_x. All of the CSA EGUs use flue gas desulfurization (i.e., scrubbers) to remove SO₂. SO₂ controls are of particular importance because, as North Carolina demonstrated in its regional haze SIP, sulfates are the major contributor to PM_{2.5} mass and visibility impairment at Class I areas in the VISTAS region and in states neighboring this region.¹⁰ See 77 FR 11867, 11877 (February 28, 2012). Thus, North Carolina concluded that reducing SO₂ emissions from EGU and non-EGU point sources in the VISTAS states would have the greatest visibility benefits for the North Carolina Class I areas and the Class I areas that the State's sources impact. See 77 FR 11868 (February 28, 2012).

Regarding NO_x, all of the CSA-subject EGUs in operation are using SCR for post-combustion NO_x control, with the exception of Allen Units 1-5 (not BART-eligible) and Marshall Units 1, 2, and 4 (BART-eligible) that use SNCR. Although SCR is the most stringent NO_x control technology available for EGU retrofits, it is unlikely that a BART determination would result in the installation of SCR at Marshall Units 1, 2, and 4 given the EGUs' NO_x emissions, the distance from Class I areas, the cost of replacing SNCR with SCR, and the incremental visibility improvement associated with the switch from SNCR to SCR. As discussed in North Carolina's 2007 regional haze SIP submittal, nitrates are a relatively small contributor

¹⁰ The VISTAS region includes North Carolina and the two states, Virginia and Tennessee, that North Carolina identified as having a Class I area potentially impacted by its sources.

to PM_{2.5} mass and visibility impairment on the 20 percent worst days at the inland Class I areas in VISTAS, which include all of the North Carolina Class I areas except for the Swanquarter National Wilderness Area. Therefore, the visibility benefits of reducing NO_x emissions at these Class I areas are small. *See* 77 FR 11868 (February 28, 2012).

Third, the emissions reductions under the BART Alternative are greater than those that would result from the installation and operation of BART at the BART-eligible EGUs covered by the CSA under a variety of scenarios.¹¹ As discussed in section II.B.1.c, above, North Carolina compared CSA emissions to BART emissions using the CSA caps, 2018 emissions projections prepared by VISTAS, IPM, and Duke Energy, and actual NO_x and SO₂ emissions. Only the emission reductions required by the CSA cap are federally enforceable by virtue of being included in North Carolina's SIP. North Carolina's calculations of emission reductions relative to the various projections provide additional information and support for its assertion that the BART Alternative achieves greater reasonable progress than BART. Tables 5 through 7, below, identify the additional emissions reductions achieved through the BART Alternative.

Table 5. BART Alternative Emissions Reductions Beyond BART Using CSA Caps and 2018 Projections (tons)

	Pollutant	BART	CSA Cap	2018 VISTAS	2018 IPM	2018 Duke
Reductions from 2002 Baseline	SO ₂	274,668	337,321	377,978	442,589	443,420
Reductions beyond BART			62,653	103,310	167,921	168,752
Reductions from 2002 Baseline	NO _x	19,364	86,879	100,746	120,087	120,465
Reductions beyond BART			67,515	81,382	100,723	101,101

¹¹ As discussed above, North Carolina used EPA's presumptive limits for NO_x and SO₂ as the BART benchmark.

Table 6. BART Alternative Emissions Reductions Beyond BART Using Actual Emissions (tons) – SO₂

	BART	2009 Actuals	2010 Actuals	2011 Actuals	2012 Actuals	2013 Actuals
Reductions from 2002 Baseline	274,668	356,503	350,791	393,864	413,862	425,241
Reductions beyond BART		81,835	76,123	119,196	139,194	150,573

Table 7. BART Alternative Emissions Reductions Beyond BART Using Actual Emissions (tons) – NO_x

	BART	2009 Actuals	2010 Actuals	2011 Actuals	2012 Actuals	2013 Actuals
Reductions from 2002 Baseline	19,364	105,049	95,506	103,518	100,732	102,468
Reductions beyond BART		85,685	76,142	84,154	81,368	83,104

Compared with BART, North Carolina's current CSA caps achieve an additional SO₂ reduction of 62,653 tons and an additional NO_x reduction of 67,515 tons relative to the 2002 baseline. Table 5 also shows that, depending on the origin of the 2018 projections, the BART Alternative results in an additional SO₂ reduction of 103,310 to 168,752 tons and an additional NO_x reduction of 81,382 to 101,101 tons beyond BART. The comparison of actual emissions under the BART Alternative to estimated BART emissions in Tables 6 and 7 shows that, between 2009 and 2013, the CSA achieved 76,123 to 150,573 tons of additional SO₂ reductions and 76,142 to 84,154 tons of additional NO_x reductions beyond BART. Regardless of the reduction scenario, the BART Alternative results in significantly lower NO_x and SO₂ emissions when compared to BART.

Fourth, the NO_x and SO₂ emissions controls needed to comply with CSA requirements began operating before any controls would begin operation under BART. BART must be installed and operated as expeditiously as practicable, but no later than five years after the date of

EPA approval of the regional haze SIP. *See* CAA section 169A(g)(4); 40 CFR 51.308(e)(1)(iv). The CSA, enacted in 2002, required compliance with the initial emissions caps for SO₂ in 2007 and NO_x in 2009, and therefore resulted in emissions reductions before EPA issued a limited approval of North Carolina's regional haze SIP on June 27, 2012. *See* 77 FR 38185. Even if EPA had approved source-specific BART determinations for the CAIR-subject units in North Carolina at that time, the BART installation and operation deadline would have been set after compliance with the CSA began.

Lastly, although the CSA does allow for limited emissions shifting, there is no indication that implementation of the CSA would result in any "hot spots," as compared to BART. The shifting of emissions under the CSA is limited by the prohibition on emissions credit trading between the EGUs owned by Progress Energy and those owned by Duke Energy before the 2012 merger, as mentioned above. Additionally, the 2009-2013 SO₂ and NO_x emissions data summarized in Tables 6 and 11, respectively, of North Carolina's submittal indicate that emissions have not shifted to any significant degree between the EGUs subject to the CSA during this time period. Emissions reductions were taking place at each EGU facility and not isolated to any one facility or group of facilities. To the extent that any shifting might occur in the future, all of the operating Progress Energy units subject to the CSA operate with the most stringent NO_x and SO₂ control equipment, and all of the Duke Energy units subject to the CSA operate with the most stringent NO_x and SO₂ controls with the exception of Allen, Marshall, and Buck which operate SNCR. Of the SNCR units, only Marshall is BART-eligible. Even assuming that a BART analysis would result in a requirement to install SCR at Marshall, any shifting of emissions to Marshall would be restricted by its available capacity. Furthermore, any incremental decrease in NO_x emissions if the State were to require SCR at Marshall would not

be expected to have a significant impact on visibility at Class I areas due, in part, to the fact that nitrates are a relatively small contributor to PM_{2.5} mass and visibility impairment on the 20 percent worst days at the Class I areas in closest proximity to Marshall.

Based on the evidence provided above, EPA proposes to find that the BART Alternative achieves greater reasonable progress than BART and thus satisfies the requirements of 40 CFR 51.308(e)(2)(i)(E).

2. Requirement that Emissions Reductions Occur during the First Implementation Period

Pursuant to 40 CFR 51.308(e)(2)(iii), the state must ensure that all necessary emission reductions take place during the period of the first long-term strategy for regional haze (i.e., by December 31, 2018). The Regional Haze Rule further provides that, to meet this requirement, the state must provide a detailed description of the alternative measure, including schedules for implementation, the emission reductions required by the program, all necessary administrative and technical procedures for implementing the program, rules for accounting and monitoring emissions, and procedures for enforcement. *Id.* EPA proposes to find that the BART Alternative meets this requirement because the State has fully described the CSA, the CSA prescribes emissions reductions through the use of emissions caps, the emissions caps are in effect and incorporated into North Carolina's SIP, and all CSA-subject EGUs are required to meet the accounting and monitoring requirements of CSAPR.¹² Furthermore, all CSA-related permitting and construction activities have been completed to meet the CSA emissions caps. EPA therefore proposes to find that North Carolina has satisfied the requirements of 40 CFR 51.308(e)(2)(iii).

3. Demonstration that Emissions Reductions Are Surplus

¹² See 76 FR 48208 (August 8, 2011).

Pursuant to 40 CFR 51.308(e)(2)(iv), the SIP must demonstrate that the emissions reductions resulting from the alternative measure will be surplus to those reductions resulting from measures adopted to meet requirements of the CAA as of the baseline date of the SIP. The baseline date for regional haze SIPs is 2002, and the first NO_x and SO₂ CSA emissions caps were not effective until 2007 and 2009, respectively. *See* 64 FR 35742. Therefore, EPA proposes to find that the reductions associated with the CSA are surplus in accordance with 40 CFR 51.308(e)(2)(iv).

B. Reasonable Progress Evaluation

EPA finalized a limited disapproval of North Carolina's regional haze SIP based on its reliance on CAIR to satisfy the BART requirement and the requirement for a long-term strategy sufficient to achieve the state-adopted reasonable progress goals. *See* 77 FR 33653. In that action, EPA also finalized limited disapprovals of a number of other states' regional haze SIPs that relied on CAIR to satisfy these requirements and finalized Federal Implementation Plans (FIPs) that substituted reliance on CSAPR for reliance on CAIR for several states. *Id.* However, North Carolina's 2014 regional haze SIP submission relies on the CSA, rather than CSAPR, to correct the deficiencies in its regional haze SIP. EPA therefore must evaluate whether inclusion of the CSA in lieu of CAIR in the state's long-term strategy is sufficient to ensure reasonable progress.

As discussed in section II.B.1.e, sulfates are the major contributor to visibility impairment at Class I areas in the VISTAS region. Based on its conclusion that SO₂ reductions would result in the greatest visibility improvements, North Carolina's 2007 regional haze SIP submission focused its reasonable progress control analysis on emission units that fall within the SO₂ area of influence of any Class I area, as modeled by VISTAS, and have a one percent or

greater contribution to the sulfate visibility impairment in at least one Class I area. *See* 77 FR 11869. Sixteen EGUs subject to the CSA and formerly subject to CAIR met North Carolina's reasonable process screening criteria. The State subsequently concluded in its regional haze SIP submission that no additional controls beyond CAIR and the CSA were reasonable for these units during the first implementation period. *See* 77 FR 11870, 11872. North Carolina's long-term strategy relied, in part, on this conclusion.

Ten the 16 aforementioned units have shut down or converted to natural gas. The remaining coal-fired units have each installed FGD to comply with the CSA. Given North Carolina's focus on reducing SO₂ emissions to achieve reasonable progress and the fact that coal-fired EGUs remaining in operation are already subject to the most stringent SO₂ controls available, EPA proposes to find that no additional controls are necessary for these units to achieve reasonable progress during the first implementation period. This proposed finding and the proposed finding that North Carolina's BART Alternative meets the requirements of the Regional Haze Rule form the basis for EPA's proposal to convert EPA's limited disapproval of the State's regional haze SIP to a full approval.

III. Proposed Action

EPA is proposing to find that North Carolina's regional haze SIP revision meets the applicable requirements of the CAA and Regional Haze Rule, including the requirement that the BART Alternative achieve greater reasonable progress than would be achieved through the installation and operation of BART. EPA also proposes to find that final approval of this SIP revision would correct the deficiencies that led to EPA's limited disapproval of the State's regional haze SIP on June 7, 2012, and proposes to convert the EPA's June 27, 2012, limited approval to a full approval. These proposed actions, if finalized, would eliminate the need for

EPA to issue a FIP to remedy the deficiencies in North Carolina's December 17, 2007, SIP submission.

IV. Statutory and Executive Order Reviews

Under the CAA, the Administrator is required to approve a SIP submission that complies with the provisions of the Act and applicable Federal regulations. *See* 42 U.S.C. 7410(k); 40 CFR 52.02(a). Thus, in reviewing SIP submissions, EPA's role is to approve State choices, provided that they meet the criteria of the CAA. Accordingly, these proposed actions merely approve State law as meeting Federal requirements and does not impose additional requirements beyond those imposed by State law. For that reason, these proposed actions:

- are not a significant regulatory action subject to review by the Office of Management and Budget under Executive Orders 12866 (58 FR 51735, October 4, 1993) and 13563 (76 FR 3821, January 21, 2011);
- do not impose an information collection burden under the provisions of the Paperwork Reduction Act (44 U.S.C. 3501 *et seq.*);
- are certified as not having a significant economic impact on a substantial number of small entities under the Regulatory Flexibility Act (5 U.S.C. 601 *et seq.*);
- do not contain any unfunded mandate or significantly or uniquely affect small governments, as described in the Unfunded Mandates Reform Act of 1995 (Public Law 104-4);
- do not have Federalism implications as specified in Executive Order 13132 (64 FR 43255, August 10, 1999);

- are not an economically significant regulatory action based on health or safety risks subject to Executive Order 13045 (62 FR 19885, April 23, 1997);
- are not a significant regulatory action subject to Executive Order 13211 (66 FR 28355, May 22, 2001);
- are not subject to requirements of Section 12(d) of the National Technology Transfer and Advancement Act of 1995 (15 U.S.C. 272 note) because application of those requirements would be inconsistent with the Clean Air Act; and
- do not provide EPA with the discretionary authority to address, as appropriate, disproportionate human health or environmental effects, using practicable and legally permissible methods, under Executive Order 12898 (59 FR 7629, February 16, 1994).

The SIP is not approved to apply on any Indian reservation land or in any other area where EPA or an Indian tribe has demonstrated that a tribe has jurisdiction. In those areas of Indian country, the rule does not have tribal implications as specified by Executive Order 13175 (65 FR 67249, November 9, 2000), nor will it impose substantial direct costs on tribal governments or preempt tribal law.

List of Subjects in 40 CFR Part 52

Environmental protection, Air pollution control, Carbon monoxide, Incorporation by reference, Intergovernmental relations, Nitrogen dioxide, Ozone, Particulate matter, Reporting and recordkeeping requirements, Sulfur oxides, Volatile organic compounds.

Authority: 42 U.S.C. 7401 *et seq.*

Dated: March 25, 2016.

Heather McTeer Toney

Regional Administrator,

Region 4.

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